



WWF

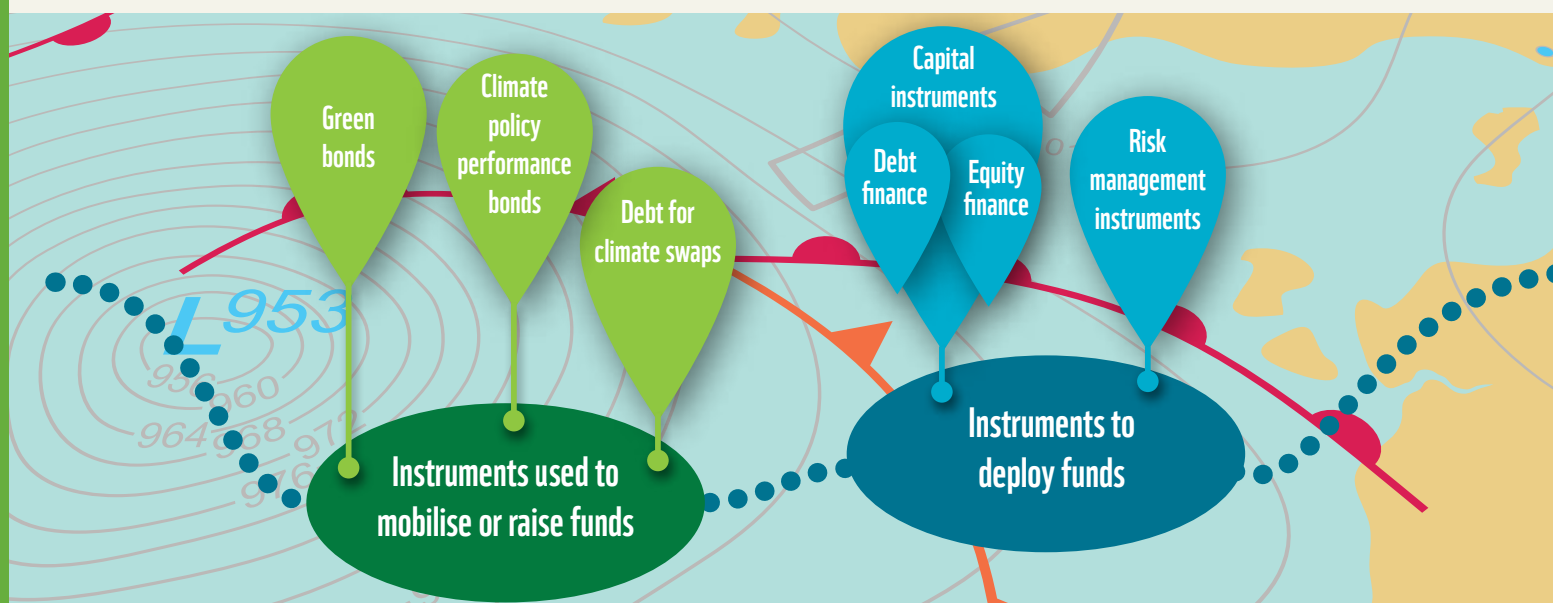
POLICY  
BRIEF

ZA

2018

*Low-carbon policy inputs*

# Financial instruments used by governments for climate change mitigation



Climate change mitigation projects and programmes have drawn on a wide range of financial instruments. These can be broadly grouped as illustrated above. This paper covers each of these instruments and provides examples of their implementation.

1

## **Use government resources strategically:**

Financing instruments deployed by governments should focus on reducing barriers, risks and market failures with the explicit aim of crowding-in private sector investment, rather than simply being used to fund projects in general.

2

## **No 'one size fits all' approach:**

Choice of instruments depends on the types of financing barriers and risks associated with climate mitigation projects.

3

## **Customise instruments to local markets:**

Choice of instruments depends on what local agencies can manage effectively and efficiently, and what local financial markets can understand and use.

4

## **No substitute to effective policy and planning framework:**

Financial instruments will only be effective if there are clear, predictable and coherent domestic policy frameworks.

Supported by:



Federal Ministry  
for the Environment, Nature Conservation  
and Nuclear Safety

based on a decision of the German Bundestag

# FINANCING CLIMATE CHANGE PROJECTS

Significant investments are needed to support the global transition to a low-carbon climate resilient future in line with the 2015 Paris Agreement. Financial instruments play a critical role in creating incentives and in triggering financial flows towards these investments.

## Contents

**Financing climate change projects**  
2

**Financial instruments to raise funds**  
3

**Instruments to deploy funds**  
8

Governments have put various financial instruments in place to drive climate change mitigation, backed by funding from a variety of sources. Climate finance systems comprise:

- Public and private sources of funds.
- Financial intermediaries that facilitate, access and manage the coordination, collection, blending and disbursement of climate finance.
- Financial instruments that raise and/or deploy climate responsive investments.
- Financial planning systems, such as governance arrangements and planning and budgetary systems, that play an important role in governing the flow of climate finance.<sup>1</sup>

This policy brief covers some financial instruments and innovations in the financial system that support the deployment of these instruments, with some examples and lessons that we can draw on for future applications. Some of the examples cover the financing of green projects and are not limited to climate change projects. This is because 'green finance', 'sustainable finance', 'climate finance' and 'low-carbon finance' relate to an overlapping territory of issues.

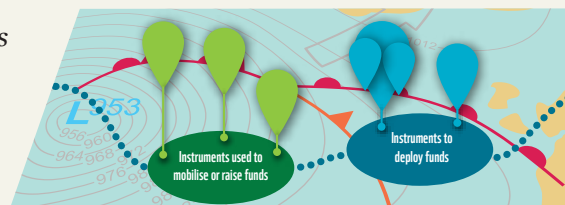
Climate change mitigation projects and programmes have drawn on a wide range of financial instruments. These can be broadly grouped as:

- Those used to **mobilise funds** or to raise funds
- Those used as financial products to **provide capital** to climate mitigation projects or to address specific risks of mitigation projects.

The brief focuses on project and technology-related financial instruments for mature technologies only. It does not cover instruments that support upstream technical assistance, capacity building, or early-stage technologies that are at research and development stage.

---

<sup>1</sup> Buchner, B., Falconer, A., *et al.*, 2012. *The Landscape of Climate Finance 2012*, Climate Policy Initiative.



# FINANCIAL INSTRUMENTS TO RAISE FUNDS

## Green bonds

Green Bonds are fixed income and sometimes market-linked financial instruments that are used to raise funds to finance or refinance projects or assets that are environmentally beneficial or have climate-related attributes.

### How they work:

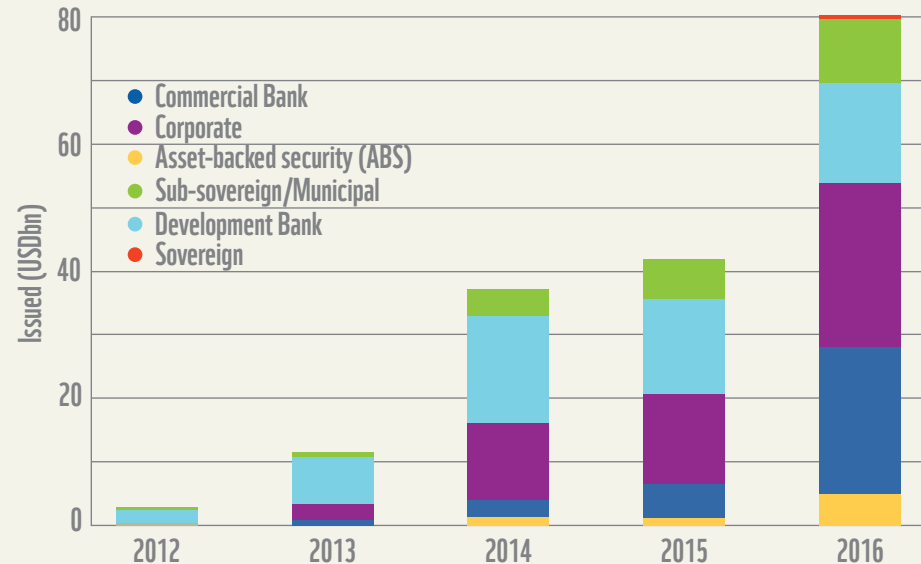
- The bond issuer (borrower) guarantees to repay the bond over a certain period of time at either a fixed or variable rate of return.
- Green bonds have the same credit risk and return profile as standard bonds.
- Not all green bonds are deployed for climate-related projects. This is because defining what is 'green' is still evolving in the marketplace. Additionally, the developments on 'green growth' and climate change finance cover more than climate mitigation attributes and greenhouse gas (GHG) emissions reduction.

### LONG-DATE INCOME STREAM:

an income-generating asset with a revenue stream that occurs over a long period of time

First issued in 2007, the market for green bonds has grown steadily with these bonds being viewed as having immense potential to harness funds from diverse sources. They are seen as the perfect fit for financing climate-related projects, which are often characterised by high upfront capital costs and **long-dated income streams**.

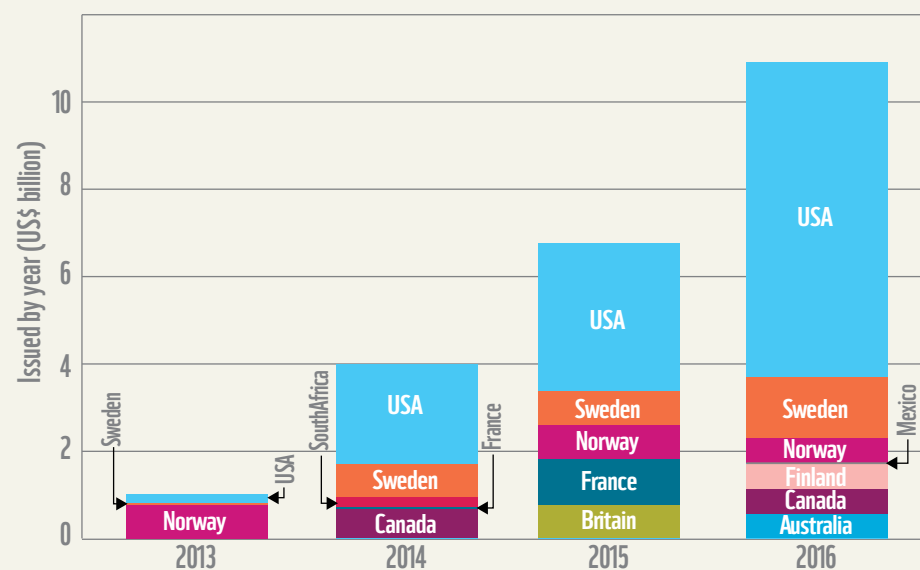
### Institutional issuers of green bonds per year globally<sup>2</sup>



There are several examples of government or government agency-led issuance of green bonds including: France, Poland, China, Sweden, US, Mexico, India, South Africa, Britain and Australia.

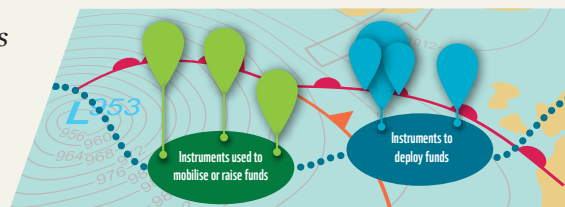
Municipalities and city level agencies such as utility and transport companies are increasingly using green bonds to finance both adaptation and mitigation efforts. Examples include: Massachusetts, City of Gothenburg, and the City of Johannesburg.

### Green bonds issuance by cities and municipalities (2013–2016)<sup>3</sup>



<sup>2</sup> Climate Bonds Initiative. 2017a. *Green Bonds Highlights 2016*.

<sup>3</sup> Climate Bonds Initiative, 2017b. *Green City Bonds: Financing low carbon urban infrastructure*.



## Climate policy performance bonds

Distinct from green bonds, Climate Policy Performance Bonds (CPPB) have been proposed as an innovative mechanism to mobilise resources for climate change mitigation projects on the ground.

### How they work:

- They are issued by a government and pay an interest coupon based on the issuing government's climate policy performance, such as a reduction in GHG emissions against the Nationally Determined Contribution committed to under the 2015 Paris Agreement, or an increase of the share of renewable energy in total energy production.<sup>4</sup>
- This provides for a targeted mechanism to raise funds for climate mitigation projects while giving a clear incentive for the bond issuer to reduce carbon emissions.<sup>5</sup>

### Examples from the field



*Destroyed tropical rainforest in Amazonia Brazil.*

#### Brazil's Amazon Fund<sup>6</sup>

Although Climate Policy Performance Bonds have not been deployed anywhere yet, a variant of the concept can be found in Brazil's Amazon Fund. Amongst other goals, this fund aims to reduce the rate of deforestation in Brazil and transform the reduction of forest emissions into a system that finances the conservation and sustainable use of forests.

Fundraising is based on effective reduction of carbon emissions. Resources are only raised when emissions in the Amazon fall below an historical 10-year average, which is revised every five years. Under this mechanism, the government cannot raise funds in a year when the deforestation rate in the reference year is higher than the average, and will have to compensate the reduction in the following year.

<sup>4</sup> Michaelowa, A., Bouzidi, A. & Friedmann, V. 2016. Boosting climate action through innovative debt instruments. Combining debt for climate swaps and climate policy performance bonds. Concept Note. Perspectives Climate Research gGmbH & Emena Advisory. Freiburg, Germany.

<sup>5</sup> Michaelowa, Bouzidi & Friedmann, 2016.

<sup>6</sup> Leitmann, J. & Bishop, V. 2011. *Concessional Climate Finance: MDB Experience and Opportunities*. FY11 ENV Knowledge Product.



*Amazon rainforest in the Yasuni National Park.*

PHOTO: WIKIMEDIA/BY ALAI - AGENCIA LATINOAMERICANA DE INFORMACIÓN, CC BY-SA 4.0

### **Ecuador's Yasuni Guarantee Certificates (YGCs)<sup>7</sup>**

Another interesting application of the concept comes from Ecuador's Yasuni Guarantee Certificates (YGCs) issued under the government's Yasuní Ishpingo Tambococha Tiputini (ITT) Trust Fund.

In exchange for capital contributions to the fund, the government guarantees to leave the Yasuni ITT oil reserves untapped indefinitely. It does so by issuing YGC in US dollars equivalent to the face value of each contribution, equal to or above US\$50 000.

YGCs do not earn interest and do not have an expiration or maturity date as long as the government maintains its commitment not to exploit the Yasuni ITT oil reserves. In the event that the government defaults on its commitment and initiates oil prospecting, YGC holders are entitled to be reimbursed the equivalent to the face value of the YGCs in US dollars.

## **Debt for climate swaps**

These are a variant of the debt for nature swaps that are a traditional tried and tested mechanism to provide predictable and additional finance for environmental projects, including projects leading to a reduction in GHG emissions in countries burdened by high amounts of debt.<sup>8</sup>

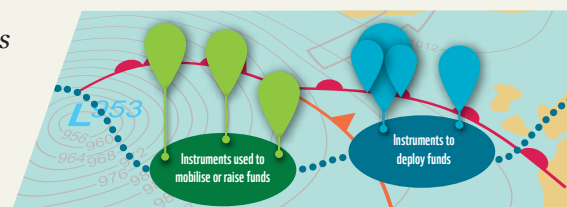
### **How they work:**

- Debt for nature swaps involve a bilateral or multilateral donor, or a private investor, or even a non-governmental organisation, writing off a portion of a country's foreign debt (whether commercial, bilateral or multilateral) in exchange for the country financing environmental or conservation projects using local funds.

<sup>7</sup> UNDP, 2010. *Ecuador Yasuni ITT Trust Fund: Terms of Reference*. <http://mptf.undp.org/yasuni>.

<sup>8</sup> Development Finance International, 2009. Debt relief to combat climate change. Paper prepared for Government of Guyana as Chair of Commonwealth Ministerial Debt Sustainability Forum. Commonwealth Secretariat. London.





- Using the same logic, debt for climate swaps would involve only climate change adaptation and mitigation projects. They are voluntary and are financed at no extra fiscal cost to the recipient government.

The first debt for nature swap was implemented in 1987 in Bolivia. The Bolivian government established a US\$250 000 fund for the management of the Beni Biosphere Reserve, and in return Conservation International purchased US\$650 000 of the country's debt owed to commercial creditors. Since then, swaps have been implemented in Brazil, Ecuador, Cameroon, Costa Rica, Dominican Republic, Ghana, Guatemala, Jamaica, Madagascar, Mexico, Nigeria, Panama, Peru, Philippines, Poland, and Zambia.<sup>9</sup>

### Examples from the field



The Organisation for Economic Co-operation and Development (OECD) estimates that between 1991 and 2003, debt for nature swaps generated almost US\$1.1 billion for conservation measures, in return for debt with face value volumes of almost US\$3.6 billion.<sup>12</sup> More recently, the Commonwealth Secretariat proposed the use of climate finance pledges to write off multilateral debt of small states in exchange for investments in climate change adaptation and mitigation initiatives.<sup>13</sup>

<sup>9</sup> Development Finance International, 2009.

<sup>10</sup> The Paris Club, set up in 1956, is a group of officials from major creditor countries whose role is to find coordinated and sustainable solutions to the payment difficulties experienced by debtor countries. As debtor countries undertake reforms to stabilise and restore their macroeconomic and financial situation, the Paris Club creditors provide appropriate debt treatment by way of debt relief by rescheduling or reducing debt service obligations during a defined period. See <http://www.clubdeparis.org> for more information.

<sup>11</sup> Development Finance International, 2009.

<sup>12</sup> OECD, 2007. Green Investment Banks. Innovative Public Financial Institutions Scaling up Private, Low-carbon Investment. OECD Environment Policy Paper No. 6.

<sup>13</sup> Mitchell, T. 2015. Debt Swaps for Climate Change Adaptation and Mitigation: A Commonwealth Proposal. Discussion Paper Number 19. Commonwealth Secretariat. London.

# INSTRUMENTS TO DEPLOY FUNDS

---

There are two types of instruments that provide funding to climate change mitigation projects. They are well-known, widely deployed, proven for development financing, and not limited only to financing climate mitigation projects:

- **Capital instruments**, i.e. instruments that provide financing directly to projects
- **Risk management instruments** that do not directly transfer money, but mitigate risk.<sup>14</sup>

## Capital instruments

There are two types of capital instruments: debt and equity. Both are typically used to overcome financing barriers, such as lack of long-term finance, lack of project finance, lack of equity finance, high and uncertain project development costs, and high capital costs.<sup>15</sup>

### DEBT AMORTISATION:

the gradual repayment  
of a debt with a fixed  
schedule over a  
specific time period

#### Debt finance<sup>16</sup>

The following debt financing instruments have been used to finance climate change mitigation projects:

- **Senior debt**: provides debt facilities in the form of a project loan or credit line to reduce the costs of a project. They provide concessionary funds (a 'soft loan') that may be blended with more expensive commercial funding, and offer longer-term debt than may be available in local financial markets. Senior debt allows for a range of debt amortisation and repayment schedules to customise debt service costs to project cash flows.

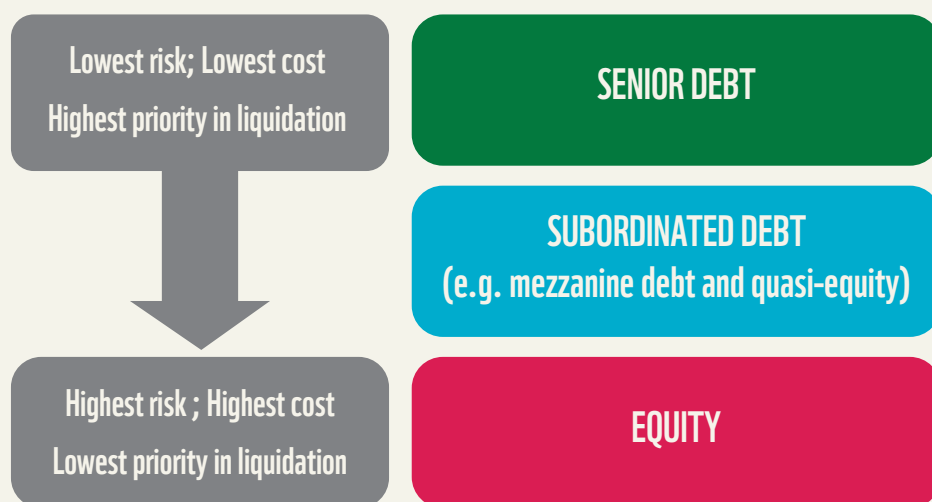
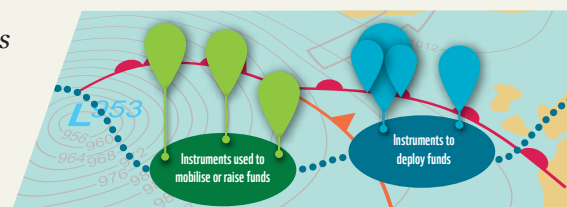
---

<sup>14</sup> Lindenbergh, N. 2014. *Public instruments to leverage private capital for green investments in developing countries*. Deutsches Institut für Entwicklungspolitik gGmbH. Bonn.

<sup>15</sup> For a discussion on financing barriers, see WWF-SA's paper, *Barriers to greening the economy in South Africa*.

<sup>16</sup> The technical discussion in this sub-section is based on The World Bank. Undated. *Financing renewable energy. Options for Developing Financing Instruments Using Public Funds*; London School of Economics. 2009. *Meeting the Climate Challenge: Using Public Funds to Leverage Private Investment in Developing Countries*. Section 4; Global Environment Facility (GEF) Council, 2014. Non-Grant Instruments. Policy: FI/PL/02.





- **Subordinated debt:** covers intermediate funding between senior debt and equity. It includes all forms of mezzanine or quasi-equity finance and their variants. Mezzanine financing is a mix of debt and equity financing that gives a lender the right to convert to an equity interest in the company in case of default, generally after senior lenders are paid.
  - It allows for insulating senior debt investors from unacceptable risks by reducing the share of senior debt in total project financing while still allowing providers of senior debt to retain control of the project.
  - It reduces the cost of capital in cases where equity is too expensive.
  - The repayment is secondary to providers of senior debt. This higher risk is usually offset by a higher return than on senior debt.
- **Concessional loans ('soft loan'):** provides loans at below-market rates and with longer maturities and repayment periods.
- **Revolving funds and refinancing schemes:** establishes a mechanism that offers contingent loans that are repaid to the fund as the project matures and generates income. If the project is not successful, the loan is fully or partially forgiven and not repaid. These funds are designed to invest in a portfolio of projects in anticipation of successful projects allowing for reflow to the fund, making the fund sustainable.

Loans indicate confidence and viability of a climate mitigation project. For the public lender, loans allow the repayment to fund or refinance more projects. However, using loans to leverage private funds presents several **challenges**. For example:

- It is difficult for the public donor to estimate the degree of concessionality that is needed to provide useful funding to the project without wasting public money.
- Choosing some projects over others may create market distortions.<sup>17</sup>

<sup>17</sup> Lindenbergh, 2014.



*A windfarm in the Atacama Desert, Chile, is an example of the type of project benefitting from credit lines aided by Chilean Economic Development Authority.*

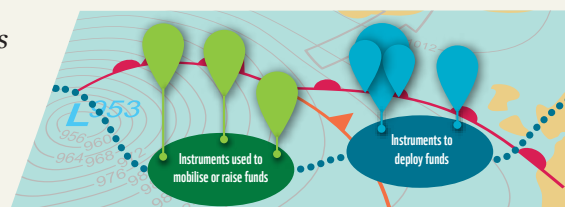
### Examples of senior debt/credit lines

- The **Thailand Energy Efficiency Revolving Fund** provides credit lines to participating Thai banks on a full recourse basis and at zero interest rate. The requirement is that funds are lent to projects at a maximum interest rate of 4%.
- The **Chilean Economic Development Authority** offers credit lines to Chilean banks for lending to renewable energy projects.
- Peru's **Corporación Financiera de Desarrollo S.A. (Cofide)** provides credit lines to commercial banks or other financial intermediaries under COFIGAS, a programme that provides the technology and funding to convert taxis and buses into natural gas vehicles in Lima.
- The **Low-Carbon Agriculture Program of the Brazilian Ministry of Agriculture** provides debt finance for sustainable agricultural practices aiming to reduce emissions from the agriculture sector by up to 173 million metric tonnes of CO<sub>2</sub> equivalent (Mt CO<sub>2</sub>e) by 2020.<sup>18</sup>

### Examples of senior subordinated debt

- In the US, the **Vermont Clean Energy Development Fund**, funded by the Department of Public Service and the utility Entergy, uses subordinated debt.

<sup>18</sup> Moarif, S. & Rastogi, N.P., 2012. *Market-based climate mitigation policies in emerging economies*. Center for Climate and Energy Solutions. Arlington, VA.



### Examples of Concessional loans ('soft loans'):

- Funded through a levy paid by oil companies, the **Climate Fund in Brazil** offers low-interest loans for low-carbon projects offered through the Brazil National Development Bank (BNDES) in the areas of: urban railways and other efficient urban transport; energy generation from specific renewable energy sources and systems; waste-to-energy; and combating desertification.<sup>19</sup>
- Project loan facilities are provided by the **Indian Renewable Energy Development Agency (IREDA)**.
- The **Canadian Green Municipal Investment Fund** provides soft loans to support project development activities.
- Malaysia's **Green Technology Financing Scheme (GTFS)** provides soft loans for users of green technologies in the areas of energy, water and waste management, buildings and transport.
- China's **Clean Development Mechanism (CDM) Fund** provides concessional loans for industrial activities that generate actual emissions reduction. The loans have a three-year tenure and an interest rate 15% lower than the benchmark rate.<sup>20</sup>
- **Brazil National Development Bank (BNDES)** offers low-cost, long-term financing solutions to projects for biofuels, renewable energy, energy efficiency, and land-based activities. The Brazilian government subsidises the loans so that they can be offered at a lower interest rate, with grace and longer repayment periods.<sup>21</sup>

### Examples of revolving refinance schemes

- The US **Florida Clean Energy Investment Program** uses revolving loan funds.
- Lebanon's **National Energy Efficiency and Renewable Energy Action**, a national financing mechanism initiated by the Central Bank of Lebanon, provides interest-free long-term loans for energy-efficiency in buildings and industry and for renewable energy projects for new and existing facilities.<sup>22</sup>
- **Bangladesh Bank** has a revolving refinance scheme amounting to Taka 2 billion from its own funds to broaden the financing avenue for green products like solar energy, biogas plant and effluent treatment plants.<sup>23</sup>
- **Indian Renewable Energy Development Agency (IREDA)** offers a refinancing scheme which allows as much as 30% of the clean energy loans issued by commercial banks to be refinanced at 2%, provided that the interest rate from the lending institution does not exceed 5% per annum.

19 Moarif & Rastogi, 2012.

20 China Clean Development Mechanism Fund, undated.

21 Moarif & Rastogi, 2012.

22 The Lebanese Centre for Energy Conservation, undated.

23 Chowdhury, M.A.A. & Dey, M., 2016. Green Banking Practices in Bangladesh. In *The Cost and Management*. 44:2. March–April.



*An example of a building retrofit to supply renewable energy.*

## City level examples

Cities are providing low-interest loans, guarantees and equity to attract private sector funds into priority climate change projects.

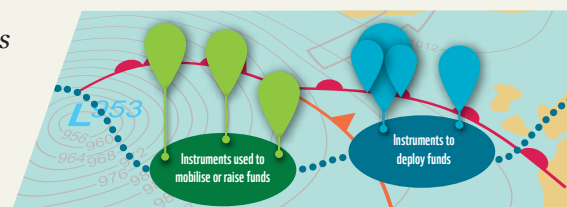
- The **Amsterdam Investment Fund (AIF)** supports the delivery of the Amsterdam Energy Strategy 2040 to large-scale commercial projects, smart energy start-ups, and energy-efficiency measures for home owners.<sup>24</sup> The Fund offers loans at a fixed rate of 1.99% repayable over a maximum of 15 years.
- The **Sustainable Melbourne Fund** provides loans at lower interest rates and for longer terms to innovative, early-stage projects in areas such as building upgrades, renewable energy systems, and lighting solutions that are scalable, profitable and deliver a sustainability outcome.<sup>25</sup>
- Other cities have introduced or are designing similar funds, including Chicago, Toronto and Boston.<sup>26</sup>

<sup>24</sup> C40 Cities Climate Leadership Group, Siemens and Citi. 2016. *New Perspectives on Climate Finance for Cities. Finance Solutions for New and Emerging Infrastructure Approaches to Urban Climate Mitigation and Adaptation.*

<sup>25</sup> C40 Cities Climate Leadership Group, Siemens & Citi. 2016.

<sup>26</sup> C40 Cities Climate Leadership Group, Siemens & Citi. 2016.





### Role of central banks in policy innovations in the financial system to support climate change finance

- The **Central Bank of Lebanon** has a policy to subject banks with a higher share of green lending to lower reserve requirements. This enables commercial banks to use part of their mandatory reserves to make low-cost, medium to long-maturity loans for renewable energy and energy-efficiency. This policy has resulted in a national financing mechanism – the National Energy Efficiency and Renewable Energy Action – to provide cheap credit to the private sector for energy-efficiency and renewable energy projects related to renewable energy production and energy-efficiency in buildings.<sup>27</sup>
- **Bangladesh's Central Bank's Green Transformation Fund** is used to facilitate the financing of foreign exchange to export-oriented textile and leather goods industries, to access environmentally-friendly capital machinery in areas such as water-use efficiency, waste management, renewable energy, energy-efficiency and resource-efficiency.<sup>28</sup> Two other relevant policies are a green refinancing scheme and a mandatory credit quota for loans.<sup>29</sup> Policy guidelines for green banking encourage banks to conduct systematic environmental risk analysis as part of the credit appraisal process.<sup>30</sup>
- The **China Banking Regulatory Commission** has issued Green Credit Guidelines to encourage banks to actively adjust their green credit structure, and in turn, to account for environmental and social risks and boost the transformation of the economic structure.<sup>31</sup>
- The **Mongolian Sustainable Finance Principles and Sector Guidelines** of Mongolia's central bank is a voluntary framework to support local banks in integrating environmental and social considerations into lending decisions and product design.<sup>32</sup>
- Indonesia's financial regulator has launched a **Roadmap for Sustainable Finance** to map out developments needed to advance sustainable finance through 2019. The Roadmap includes measures to increase the supply of sustainable finance through targeted loans and guarantee schemes, green lending models, green bonds, and a green index.<sup>33</sup>

27 United Nations Environment Programme (UNEP), 2017. Inquiry: Design of a Sustainable Financial System, On the Role of Central Banks in Enhancing Green Finance. Inquiry Working Paper 17/01. UNEP, Geneva.

28 Bangladesh Bank. 2016. Participation Agreement of Green Transformation Fund for export oriented textile and textile products and leather manufacturing industries. FE Circular Letter No. 27.

29 UNEP, 2017.

30 Bangladesh Bank, 2016.

31 UNEP, 2014. Inquiry: Design of a Sustainable Financial System, Aligning the Financial System with Sustainable Development. UNEP, Geneva.

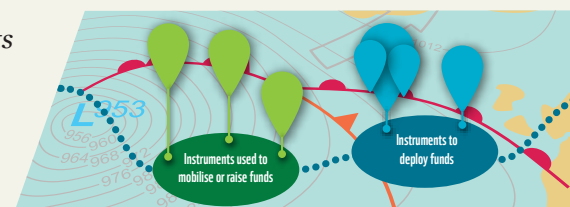
32 UNEP, 2014.

33 UNEP, 2017.



*India's second largest operational onshore wind farm in the Jaisalmer district, Rajasthan. Its capacity is 1 064 MW.*





## Equity finance

Governments that provide equity for climate change mitigation projects give a capital contribution without receiving any guarantee of repayment. In doing so, they acquire ownership of the project. Thus, equity financing constitutes a strong commitment. Although equity financing leverages private investment by providing long-term, often initial financing and therefore signalling project viability, the leverage effect of equity is fairly low. Given that equity financing requires high levels of commitment, only highly qualified projects are selected and the number of projects that can be upscaled through this instrument is limited.<sup>34</sup>

### Examples of equity finance

- The state-owned commercial bank, **BANCOLDEX Capital** is a subsidiary of Columbia's Bank of Foreign Trade (Bancóldex). It operates as Colombia's entrepreneurial development and export-import bank and provides equity capital to address the market gap for venture capital and private equity in Colombia.
- **Japan's Green Fund** makes equity and mezzanine investments up to 50% of the total equity amount with the objective of decreasing the debt to equity ratio, to facilitate loan financing for clean technologies.
- **Australia's Clean Energy Innovation Fund** provides equity (along with debt) for clean energy projects seeking growth capital or early stage capital as does **China's Clean Development Mechanism (CDM) Fund**.

Innovative grant mechanisms are on the rise across many countries. One example comes from **results-based financing** that links the payment of funds to the delivery of specific outputs. This is increasingly being explored as an instrument for investing in climate mitigation (and adaptation).<sup>35</sup> The use of this mechanism is not new – it has been used to increase access to basic services, such as infrastructure, healthcare, and education – for the poor in developing countries. The concept is built on moving away from funding for inputs such as capital costs, towards outputs or results upon the verified achievement of predefined and agreed objectives.

Another interesting example can be found in India in the form of the **viability gap funding (VGF) mechanism**. Under this funding, central government and sponsoring ministries and agencies can provide capital grants for a share of a maximum 40% of project costs, where the project would otherwise not be commercially viable due to the constraints on user fees that can be charged.<sup>36</sup> This mechanism has been deployed under the country's National Solar Mission where VGF is provided through a transparent competitive bidding process to procure solar power at a pre-determined fixed tariff. The funding is released in parts subject to projects meeting specific requirements.

<sup>34</sup> Lindenbergh, N. 2014.

<sup>35</sup> Leitmann, J. & Bishop, V. 2011.

<sup>36</sup> Ministry of New and Renewable Energy, Government of India. 2015. Jawaharlal Nehru National Solar Mission (jnnsm). Phase-II. Guidelines for Implementation of Scheme for Setting up of 2000 MW Grid-connected Solar PV Power Projects under Batch-III "State Specific VGF Scheme".

## Risk management instruments

Risk management instruments include guarantees and insurance. They do not comprise direct financing but protect financiers against risks, thereby making it possible to mobilise commercial finance at acceptable costs.

### How they work:

- They involve an agreement by the guarantor or insurer, to pay part of the costs or losses incurred by a project in exchange for a fee in the event of non-performance of the project or default of obligations by the borrower.
- Insurance is a relationship between the insurer and insured or the entity providing finance.
- A guarantee involves three parties – a guarantor who offers the guarantee, a financier who gets the guarantee, and the project that receives the finance.
- Guarantees can assume resource, regulatory, off-taker credit, liquidity or perceived technology risks. They typically take the following forms:
  - **Credit Guarantee (off-taker credit risk):** a commitment in the form of fund reserves to reimburse a lender if the borrower fails to repay a loan.
  - **Partial Credit Guarantee:** guarantees a pre-defined portion of a commercial loan, sharing the rest of the risk of potential losses with the lender and other investors.
  - **Performance Risk Guarantee:** compensates the lender if the project does not deliver the expected performance.
  - **Revenue Guarantee:** guarantees certain cash flows for a project.
  - **Structured Finance:** a mechanism that layers public guarantees, usually at concessional terms or in a junior position, as part of an overall investment package. In the event of a partial default, senior investors would be repaid first, with the guarantor and other junior partners potentially receiving no repayments.

Guarantees can be divided into:

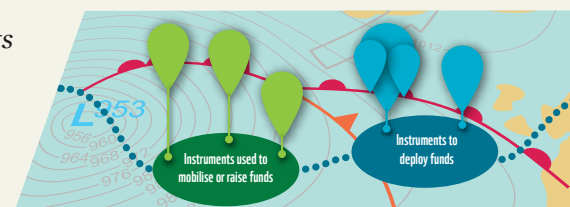
- **Pari-passu:** require money to be shared between the financier and guarantor.
- **Subordinated:** give the financier the first right to recovered money.<sup>37</sup>

Since guarantees target risks specific to individual projects, they can mobilise private financing. However, they have to be custom-designed for each project and necessitate risk assessment.<sup>38</sup> They therefore can have high transaction costs.

---

<sup>37</sup> The World Bank. Undated; London School of Economics. 2009.

<sup>38</sup> Lindenberg, 2014.



## Examples of government loan guarantee programmes

### FIRST CHARGE:

the lender has the first right over specified assets of the borrower, in case of default, to be able to recover principal and interest from the borrower

- In the US, the **Department of Energy (DOE)** offers loan guarantee programmes for early stage renewable projects without capital. If the renewable energy manufacturing or a generation project defaults on its loans, the government will repay the outstanding balance. Although in the past, the portfolio of programmes as a whole achieved over 99% success rate, the failure of one company generated significant backlash for the government.
- In Mexico, guarantee schemes financed with government funds are available through the **Fideicomisos Instituidos en Relación con la Agricultura (FIRA)**, a second-tier development bank for projects, in the areas of renewable energy, biofuels, energy-efficiency, sustainable commercial forestry and sustainable irrigation/water.<sup>39</sup>
- Brazil's **BNDES** offers guarantees to cover the risk of non-repayment, while in Bulgaria, the **Bulgarian Energy Efficiency and Renewable Sources Fund** provides partial guarantees, portfolio guarantees and debt finance.<sup>40</sup>
- India's **Partial Risk Guarantee Fund** provides guarantees up to 50% of the principal loan amount in case the borrower defaults. This risk-sharing mechanism lowers the lending risk associated with energy-efficiency projects undertaken by energy service companies.<sup>41</sup>
- Malaysia's **Green Technology Corporation**, an organisation under the purview of the Ministry of Energy, Green Technology and Water, provides a loan guarantee scheme which offers a rebate of 2% per annum on interest or profit rates charged by financial institutions. The government guarantees 60% for the green cost of the financed amount.<sup>42</sup>
- Through its loan guarantee programme, the Credit Enhancement Facility (CEF), the **Development Bank of Jamaica** provides guarantees for up to 80% of loans to small and medium enterprises for energy efficiency and renewable energy projects. This is provided that the approved financial institution holds a first charge on the business assets.<sup>43</sup>

39 Aldana, M., Braly-Cartillier, I., Shuford, L.S., 2014. *Guarantees for green markets: potential and challenges*. Inter-American Development Bank. Washington, D.C.

40 Aldana, et al., 2014.

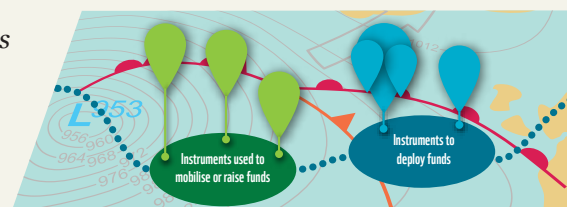
41 Bureau of Energy Efficiency (Ministry of Power), India. Undated. *Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE)*.

42 Green Bank Network. 2016. Malaysia Green Technology Corporation.

43 RJR News. 2015. *DBJ modifies loan guarantee programme*. February 4.



*A worker monitoring the ethanol at the sugar mill and ethanol manufacturing plant in Minas Gerais, Brazil.*

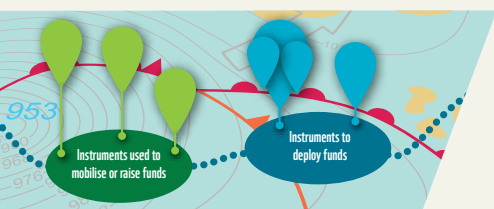


## Overview of financial instruments deployed for climate change mitigation projects<sup>44</sup>

Instruments	Uses	Advantages	Disadvantages
Senior debt	<ul style="list-style-type: none"> <li>Reduces project costs and provides long-term finance by addressing barriers, such as lack of funds, shortage of long-term funds and high interest rates.</li> </ul>	<ul style="list-style-type: none"> <li>Obligation to repay creates incentives for project viability.</li> <li>Increases flow of commercial finance to climate change mitigation projects.</li> </ul>	<ul style="list-style-type: none"> <li>Leverage is limited and may crowd out potential private providers of debt.</li> </ul>
Subordinate debt	<ul style="list-style-type: none"> <li>Addresses lack of available equity among project sponsors restrictive debt-to-equity ratio.</li> <li>Extends the term and reduces costs of senior debt.</li> </ul>	<ul style="list-style-type: none"> <li>High level of leverage.</li> <li>Crowds in senior debt by allowing projects to meet acceptable risk criteria for lenders.</li> </ul>	<ul style="list-style-type: none"> <li>Significant risk transferred to public financing agencies against limited ability to control these risks.</li> </ul>
Concessional loan	<ul style="list-style-type: none"> <li>Reduces project costs and provides long-term finance.</li> </ul>	<ul style="list-style-type: none"> <li>Addresses financing gap during project development stage, to new sectors, and where there is limited knowledge of market demand.</li> </ul>	<ul style="list-style-type: none"> <li>High risk as they do not create incentives for delivery.</li> </ul>
Equity	<ul style="list-style-type: none"> <li>Addresses lack of long-term capital and restrictive debt-to-equity ratio requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Strong incentives for project viability to enable potential gains to be realised.</li> </ul>	<ul style="list-style-type: none"> <li>Requires high returns to compensate for risks.</li> <li>Low-leverage effect.</li> <li>Project developers might be reluctant to choose equity financing as ownership transfers to the government.</li> </ul>
Guarantees	<ul style="list-style-type: none"> <li>Meet debt servicing commitment.</li> <li>Address performance risks.</li> <li>Address policy and regulatory risks.</li> </ul>	<ul style="list-style-type: none"> <li>Mitigates specific risks.</li> <li>High degree of leverage for private investment.</li> </ul>	<ul style="list-style-type: none"> <li>Significant risk transferred to public financing agencies against limited ability to control these risks.</li> <li>Increases contingent liabilities.</li> <li>May impact fiscal deficit.</li> <li>High transaction costs.</li> </ul>

<sup>44</sup> Adapted from: The World Bank, undated; Lindenberg, 2014; GEF Council, 2014.





## Low-carbon policy inputs

The climate change mitigation debate in South Africa needs to move from improving efficiency within a projection of the existing economy, to innovation and options beyond the constraints of the current dispensation and structure of the economy. It may take step changes in the development path to achieve mitigation adequate to South Africa domestic and international commitments, and maximise economic development and social wellbeing. Business models presently unconsidered may be waiting in the wings.

The 'Low-carbon development frameworks in South Africa' project seeks to deepen understanding of, and reveal opportunities for, transitions to a low-carbon economy. It facilitates and develops contributions at the intersection of climate change mitigation, economic development and socio-economic dimensions, across immediate, medium and long-term horizons.

Working variously with government, business and labour, the project reaches from providing input to emerging government mitigation policies and measures; through investigating the business and socio-economic case for selected mitigation initiatives which hold growth potential in energy, transport, industry, waste, and land use; to analysing potential future economic trajectories and the systemic opportunities offered by these.

The project is funded by the International Climate Initiative (IKI) of the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety of Germany, and implemented by WWF-SA.

**WWF South Africa's Policy and Futures Unit** undertakes enquiry into the possibility of a new economy that advances a sustainable future. The unit convenes, investigates, demonstrates and articulates for policy-makers, industry and other players the importance of lateral and long term systemic thinking. The work of the unit is oriented towards solutions for the future of food, water, power and transport, against the backdrop of climate change, urbanisation and regional dynamics. The overarching aim is to promote and support a managed transition to a resilient future for South Africa's people and environment. The organisation also focuses on natural resources in the areas of marine, freshwater, land, species and agriculture.

**wwf.org.za**

### TOPICS IN SERIES

BARRIERS

LABOUR MARKET

CONSUMPTION

MANUFACTURING

EARNING A LIVING

**POLICY INPUTS**

Author:

Manisha Gulati

Reviewer:

Prabhat Upadhyaya, WWF-SA

Available at:

[www.wwf.org.za/report/financial\\_instruments\\_mitigation](http://www.wwf.org.za/report/financial_instruments_mitigation)

Contact for WWF South Africa:

Saliem Fakir, Head: Policy and Futures

Unit, telephone +27 (0)21 657 6600,

e-mail [sfakir@wwf.org.za](mailto:sfakir@wwf.org.za)

Series editor:

Barbara Hutton

Design:

Farm Design, [www.farmdesign.co.za](http://www.farmdesign.co.za)

Photos: Unless otherwise indicated, all photos by Shutterstock.com or Google image search ('schools in South Africa')

Published in 2018 by WWF-SA, Cape Town, South Africa. Any reproduction in full or in part must mention the title and credit WWF-SA as the copyright owner.

Copyright: You are welcome to quote the information in this paper provided that you acknowledge the source as follows: Gulati, M. 2018. Financial instruments used by governments for climate change mitigation.

If you would like to share copies of this paper, please do so in this printed or electronic PDF format.

Every effort has been made to trace copyright holders, but if any copyright infringements have been made, we would be grateful for information that would enable any omissions or errors to be corrected in subsequent impressions.

© Text 2018 WWF-SA. All rights reserved.



#### Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

[wwf.org.za/energy](http://wwf.org.za/energy)